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DIVISION OF OIL, GAS AND MINING

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TO: Internal File

FROM: James D. Smith, Reclamation Specialist and Team Lead JDS

RE: Technical Analysis for addition of federal lease U07064-027821 to the Dugout Canyon Mine permit area - Significant Revision SR99D(2), Canyon Fuel Company LLC, Dugout Canyon Mine, ACT/007/039 SR99D(2)

SUMMARY:

The last permit change for this mine was in October 1998: a parcel of BLM land located at the downstream end of the disturbed area was incorporated into the permit to better accommodate a sedimentation pond for the mine pad; water storage tanks were added up the canyon from the main pad area; and coal storage and the electric-power sub-station were expanded.

Proposed significant revision SR99D to the Dugout Canyon Mine MRP was received by the Division on May 21, 1999. The significant revision is for addition of federal lease U07064-027821 to the permit area. Maps also outline an adjacent Utah State Institutional Trust Lands (SITLA) coal tract that is not part of the current significant revision application but that is an area of possible future expansion east of the federal lease: data for this SITLA tract are in the significant revision submittal also, but the TAs do not specifically address this SITLA tract.

In a TA covering geology and hydrology dated October 12, 1999, geologic and hydrologic resource information provided in the Significant Revision was determined to be adequate. The operation water-monitoring plan was found deficient because the plan was not clear, which had resulted in confusion and failure to follow the plan in the past and would probably continue to cause problems in the future. The permittee was asked to put the water-monitoring plan into a clearer, preferably tabular, format.

The Division sent a comprehensive TA to the permittee on November 8, 1999. The permittee's response was received at the Division on January 12, 2000. Water-monitoring plan deficiencies identified in the November TA have been adequately addressed.

TECHNICAL ANALYSIS:

ENVIRONMENTAL RESOURCE INFORMATION

HYDROLOGIC RESOURCE INFORMATION

Findings:

Geologic and hydrologic resource information in the significant revision was previously determined adequate (see November 1999 TA) and the technical analysis is not repeated here.

OPERATION PLAN

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

Underground mining and reclamation activities are planned to be conducted to minimize disturbance of the hydrologic balance within the permit and adjacent areas, to prevent material damage to the hydrologic balance outside the permit area, and to support approved postmining land uses in accordance with the terms and conditions of the approved permit and the performance standards of this part. The Division has not required additional preventive, remedial, or monitoring measures to assure that material damage to the hydrologic balance outside the permit area is prevented.

The monitoring plan at Dugout Canyon Mine conforms to the amended monitoring plan approved for the adjacent Soldier Canyon Mine, which is also operated by Canyon Fuel Company. The amended Soldier Canyon Mine monitoring plan is based on UDOGM Coal Regulatory Program Directive Tech-004 (Tech-004) and was approved in accordance with the procedure in section 5E of Tech-004. (By defining terms, stating objectives, and identifying responsibilities, Tech-004 is meant to clarify the Division's position on what constitutes an appropriate monitoring program and provides methodology for consistently amending these monitoring programs. Under Tech-004, amendments to monitoring programs will be approved or disapproved on a site specific basis.)

Ground-water monitoring.

Locations of wells and springs to be monitored are shown on Plate 7-1. Operational ground-water quality parameters to be monitored at the Dugout Canyon Mine are listed in Table 7-4 of the significant revision. The parameters correspond with the operational parameters in Table 4 of Tech-004 except that total alkalinity and hardness are not included. Operational ground-water monitoring protocols are given in Table 7-4 and discussed on pages 7-53 through 7-58.

For the initial Dugout Canyon Mine MRP, the permittee selected springs SC-65, SP-20 (same as S-30), SC-14, and SC-100 for operational monitoring because they were considered reasonably accessible and representative of conditions within their respective formations (page 7-54); however, there was actually little historic data for these springs and it was necessary to rely on data from the Soldier Canyon Mine and surrounding springs to determine baseline conditions. Because of the dearth of baseline water-quality and -quantity data, the operator was asked to commit to 2 years of quarterly water-quality and -quantity monitoring at these four springs rather than measuring field parameters only (UDOGM TA dated October 16, 1998).

Springs SC-65, SP-20, SC-14, and SC-100 were to have been monitored for operational water quality and quantity beginning the third-quarter of 1998; however, due to the lack of clarity in the monitoring plan, only field parameters were collected. Table 7-4 of the significant revision clarifies that monitoring for operational water-quality parameters was begun in the 3rd quarter of 1999 and will continue for 2 years, after which monitoring will be for the field measurements (flow, pH, specific conductance, and temperature) listed in Table 7-4. This varies from the recommended schedule in Tech-004 but conforms with the amended (amended following the procedure of Tech-004) monitoring plan that was approved for the adjacent Soldier Canyon Mine. Third quarter 1999 data have been received by DOGM.

The significant revision adds springs SC-116, 200, 203, 227, 259, and 260 to the operational monitoring list: 200, 203, 259, and 260 are in the SITLA tract. Baseline data are scarce in the vicinity of the Dugout Canyon Mine, so quarterly water samples from these springs are to be analyzed for the baseline parameters specified in Tech 004 for 3 years: this 3-year monitoring period began with the 1st quarter 1999. After the initial 3-year period, these springs will be monitored quarterly for field parameters only. Data for March and June 1999 are tabulated with the ground-water information in Appendix 7-2 (the table does not include spaces for Cu, NH_3, and cations and anions, and it is not clear whether Mn is total or dissolved), and data for the 3rd quarter 1999 have been received by DOGM (all baseline parameters).

In addition to the monitoring just described, tritium and operational water-quality parameters will be determined for all 10 springs at high flow and low flow during the first "wet" year and during the first "dry" year. Also during these "wet" and "dry" years, spring flows will be measured weekly between April 1 and August 31, as conditions permit, with the intent of preparing baseflow hydrographs from the data. "Wet" and "dry" years will be defined based on snow-pack measurements as of March 1 for the Price-San Rafael area, a "wet" year being the first year after permit issuance when the snow pack water content is greater than 110% of normal and a "dry" year being the first year following permit issuance

when the snow pack is less than 70% of normal. These "wet" and "dry" years might occur during the initial 2 years of regular quarterly operational monitoring (pages 7-58 and 7-59, Table 7-4).

Tech-004 recommends that for springs, water-quality samples be analyzed for baseline parameters every fifth year. Page 7-57 includes a commitment to collect one water sample from each monitored spring, at low flow every fifth year, during the year preceding re-permitting, that will be analyzed for baseline parameters.

Water depth in wells GW-10-A, GW-11-2, and GW-24-1 will be monitored quarterly. Well GW-24-1, completed in the Castlegate Sandstone, is currently monitoring ground-water levels in federal lease U07064-027821.

In September 1998, during Phase I construction of the mine, ground water was discovered discharging from the old Gilson coal-seam workings on the east side of Dugout Canyon. This water had been seeping undetected through the alluvium and into the stream channel. Beginning in the fourth quarter of 1998, this water was to be monitored for operational ground-water parameters at point MD-1 (Table 7-4). Data for October and December 1998 and March and June 1999 are tabulated with the surface-water information in Appendix 7-7 (the table does not include spaces for and cations and anions, and it is not clear whether Mn is total or dissolved), and data for the 3rd quarter 1999 have been received by DOGM (all operational parameters).

Surface-water monitoring.

Locations of monitoring points are shown on Plate 7-1. Surface-water monitoring protocols are given in Table 7-5 and on pages 7-58 through 7-62 of the significant revision. Operational surface-water quality parameters to be monitored at the Dugout Canyon Mine are also listed in Table 7-5. The parameters correspond with the operational parameters in Table 5 of Tech-004 except that total alkalinity and hardness are not included.

Surface-water monitoring site DC-1 is below the disturbed area and discharge points of the Dugout Canyon Mine, and DC-2, DC-3, DC-4, and DC-5 are above. DC-1, DC-2, and DC-3 are monitored quarterly for operational field and laboratory parameters (Table 7-5). Data are tabulated in Appendix 7-7, baseline data from 1979 to 1981 for DC-1, and operational data from August 1997 for all 3 sites (the table does not include spaces for Cu, NH_3, and cations and anions, and it is not clear whether Mn is total or dissolved). Operational data for the 3rd quarter 1999 have been received by DOGM.

Under the proposed significant revision, additional monitoring will be done at PC-1a and PC-2 on Pace Creek to evaluate surface-water conditions upgradient and downgradient of the significant revision area and the SITLA tract, and at RC-1 in Rock Canyon to obtain baseline data for future mine expansion into the SITLA tract. Baseline data will be obtained for 3 years prior to initiating operational monitoring (page 7-58). Data for March and June 1999 are tabulated with the surface-water information in Appendix 7-7 of the significant revision (the table does not include spaces for Cu, NH_3, and cations and anions, and it is not clear whether Mn is total or dissolved). Baseline data for the 3rd quarter 1999 have been received by DOGM.

During the first "wet" and "dry" years (defined above), flows at DC-2, DC-3, DC-4, DC-5, PC-1a, PC-2, and RC-1 will be measured weekly between April 1 and August 31, as conditions permit. Also, tritium and operational water quality will be measured for samples collected at DC-4 and DC-5 at high flow and low flow during each year (pages 7-58 and 7-59, Table 7-5). Tritium content will not be determined at DC-2, DC-3, PC-1a, PC-2, and RC-1.

For surface water, Tech-004 recommends one water-quality sample at low flow every fifth year, either during the year preceding re-permitting or at midterm review, to be analyzed for baseline parameters. The MRP contains a commitment to collect one water sample at each sampling point during low flow period every fifth year, during the year preceding re-permitting, to be analyzed for baseline parameters (p. 7-59).

Transfer of wells.

The significant revision contains no plans for boring or construction of wells. Well GW-24-1 (completed in the Castlegate Sandstone) is currently monitoring ground-water levels in federal lease U07064-027821. Before final release of bond, exploration or monitoring wells will be sealed in a safe and environmentally sound manner. Ownership of wells will be transferred only with prior approval of the Division, and conditions of such a transfer will comply with State and local laws. Canyon Fuel Company will remain responsible for the management of transferred wells until bond release (Section 731.400).

Findings:

Operations hydrologic information provided in the significant revision is considered adequate to meet the requirements of this section.

RECLAMATION PLAN

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Findings:

Reclamation hydrologic information provided in the significant revision was determined adequate previously (see November 1999 TA), and the technical analysis is not repeated here.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Findings:

Reclamation hydrologic information provided in the significant revision was determined adequate previously (see November 1999 TA), and the technical analysis is not repeated here.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

Regulatory Reference: 30 CFR Sec. 784.14; R645-301-730.

An assessment of the probable cumulative hydrologic impacts (CHIA) of the Soldier Canyon and Dugout Canyon Mines has been prepared. This current CHIA includes the significant revision area and is sufficient to determine, for purposes of permit approval, whether the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area. Maps have been updated to show the addition of federal lease U07064-027821 to the Dugout Canyon Mine permit.

RECOMMENDATION

Significant Revision ACT/007/039 SR99D should be approved for insertion into the Dugout Canyon Mine Mining and Reclamation Plan.

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